

# **VIABILITY ASSESSMENT for the Daniel Boone National Forest**

July 15, 2003 (Final Edition)

January 9, 2002 (2<sup>nd</sup> Edition)

October 1, 2001 (1<sup>st</sup> Edition)

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## EDITING NOTES

### October 2, 2001

The Viability Assessment was updated on October 2, 2001, to include changes in the following sections (prior to review): Introduction, Conifer-Northern Hardwood attachment B, Mixed Mesophytic attachment A, Dry-Mesic Mixed Pine-Oak attachment B, Dry-Xeric Oak attachment C, Southern Yellow Pine attachment B, Riparian attachment A, and Grassland attachment B.

### July 1, 2002

All editing changes to the Viability Assessment (October 1, 2001), that were identified by team members and reviewers through June 30, 2002, were incorporated into the 2<sup>nd</sup> Edition. This includes numerous edit and formatting changes, edit and revision of tables, and development of habitat association matrices (attachment C) for all Aquatic Associations.

### July 15, 2003

Final copy July 15, 2003, minor format edits.

## Table of Contents

<b><i>Introduction</i></b>	Page
Scope, Purpose, Process	i
<b><i>Terrestrial Habitat Associations</i></b>	Section Number
White Pine-Hemlock	1
Conifer-Northern Hardwood	2
Mixed Mesophytic	3
Dry-Mesic Oak	4
Dry-Xeric Oak	5
Dry-Xeric Cedar-Oak	6
Dry-Mesic Mixed Pine-Oak	7
Dry-Xeric Mixed Pine-Oak	8
Southern Yellow Pine	9
Riparian	10
Grassland	11
General Forest	12
Rock Outcrops	13
Seeps/Swamp	14
Lake and Pond Margins	15
<b><i>Aquatic Habitat Associations</i></b>	
Lake Cumberland/Cave Run Lake	16
Laurel River Lake	17
Lotic Water (Streams)	18
General Standing Water	19
<b><i>Summary</i></b>	20
<b><i>Appendices</i></b>	
Ecological Sections and Subsections Map	Appendix A
Ecological Landtype Associations Map	Appendix B
DBNF Short List (Potential Species at Risk)	Appendix C
List of Other Species Mentioned	Appendix D
Glossary	Appendix E

## **INTRODUCTION**

### ***Scope***

This examination of viability was conducted for species of the Daniel Boone National Forest (DBNF) as part of the Forest Plan revision process. It is intended to be an internal planning document.

### ***Purpose***

The primary purpose of the Viability Assessment is to assess and assemble biological and ecological information and make viability recommendations to the forest planning process. It enables development of Forest Plan management direction to provide for, and reasonably ensure, the viability of all native and desired non-native species of flora and fauna within the capabilities of the Daniel Boone National Forest. The National Forest Management Act (NFMA) regulations (36 CFR 219.19) define a viable population as one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence [and] is well distributed in the planning area. The planning area is defined as the National Forest System lands addressed in the Forest Plan.

NFMA regulations require National Forests to provide habitat in order “to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.” Additional direction (USDA Regulation 9500-4) extends this mandate to include vascular plants. Regulations (36 CFR 219.26) also direct that “Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area.” Thus, the viability of individual species must be considered within the context of overall diversity of plant and animal species, and the multiple-use objectives for the planning area.

### ***Process***

Forest Service decision-makers have considerable discretion regarding how to provide for viability, so long as relevant factors are not overlooked, no clear errors of judgment are made, a rationale is provided for using the approach taken, and the plain language requirements of the regulations are met. (Associate Deputy Chief, Sally D. Collins, 1920/1570 memo of June 18, 2001, to the Regional Foresters)

This examination is fundamentally based on a coarse filter/fine filter approach to environmental analysis. At the coarse filter level, larger landscape communities and specific rare communities are identified. It is thought that providing for these forest components will provide for the continued existence of most forest species. At the fine filter level, a species-specific examination is made to identify any species that may be at risk and are not adequately supported through the perpetuation of the various forest communities.

Because species and their environments are dynamic, it is not possible to insure that a species will persist indefinitely. Likewise, there is not a single, fixed size of a population above which a species is viable and below which it will become extinct (Boyce 1992). Consequently, viability

is best expressed as a likelihood, and the level of assurance that a population will be maintained becomes a policy, legal, and technical issue.

### ***Summary Description of the Viability Assessment Process***

Assumption : The forest environment will be perpetuated and remain in a predominately forested condition.

#### ***Steps***

1. *Develop a list of Forest species (macro-invertebrates and taxonomically higher organisms).*

A list of approximately 3,500 species of flora & fauna was documented as occurring on, or in the immediate vicinity, of the DBNF (referred to as the Long List). References were documented for all records.

Information Sources: Fish and Wildlife Information Exchange, Virginia Technological University, Blacksburg, Va. – assembled a habitat relationships database for the DBNF based on the records of the Va., Ky., Tn., and Mo. Fish and Wildlife Information Systems; literature searches; Forest inventories; and field notes.

2. *Identify forest communities (landscape scale habitat types), and rare communities on the Forest (coarse filter).*

Twelve forest community types, such as mixed mesophytic forest, and 24 rare communities were identified for terrestrial conditions. Aquatic habitats were stratified into cold, cool, or warm water in running or standing condition. A wide variety of habitat modifiers were also identified for both terrestrial and aquatic conditions. Modifiers are specific habitat components such as snags, moisture, area size, stream substrate, ... that must be present for suitability.

Information Sources: Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests in the Southern Region, R8-FR-62; Cooperative Inventories of Endangered, Threatened, Sensitive, and Rare Species on the DBNF; Forest Land and Resource Management Plan; Forest Aquatic Assessment.

3. *Develop a list of potential species at risk (fine filter).*

A list of “potential species at risk” (413 species) was developed to include the Forest’s Endangered and Threatened, Sensitive, and Conservation Species lists, and other species where threats, sensitivity, or trends produce concerns about persistence on the Forest. Also species, which themselves may not be at risk, but on which continued viability of other species at risk is dependent, were included. This is referred to as the Short List. Selection criteria and the DBNF status is displayed in appendix C.

Information Sources: PETS lists, Conservation species list, Partners in Flight at risk rankings for Neotropical Migrant Birds on the Northern Cumberland Plateau, and other local or landscape species concerns.

4. *Identify and document species/habitat relationships for the shortlist and assemble a database to recognize similarities in habitat requirements.*

Necessary literature searches were conducted to assess available scientific information in describing species/habitat relationships for each species on the Short List. Summary descriptions were attached to each Association report. Terrestrial and aquatic databases were constructed to record habitat characteristics and document references (3,500± records). Habitat needs were described by forest and aquatic resource conditions, specific rare communities, and habitat modifiers as needed to represent specific habitat requirements.

Information Sources: Information assembled in step 1, species-specific literature searches, personal communications and expert opinion, and professional judgment.

5. *Group species into Habitat Associations based on similarities in habitat requirements and/or threats.*

Terrestrial and aquatic matrices were generated from the databases to display similarities in habitat needs for the Short List of species. Species were grouped into 15 terrestrial Habitat Associations and 4 aquatic Associations based on similar life requisites and habitat characteristics.

Grouping species helps to efficiently consider and develop management strategies for the entire list of species. Species may occur in more than one group. Grouping species in associations is as much art as science, with efficiency for planning the driver in making grouping decisions.

Information Sources: Terrestrial and aquatic matrices.

6. *Describe each Habitat Association and provisions determined essential to ensure the survival and persistence of "potential species at risk" on the Forest.*

Reports were developed for each of the 19 Habitat Associations, basically in a stand-alone context. Each report addresses the following factors and is formatted as outlined.

- I. Description of Habitat Association (physical characteristics)
  - Location on the DBNF
    - General location
    - Landtype Associatons (LTAs) or other appropriate levels of the Ecological Classification System (SubSection and LTA Maps - Appendices A and B).
  - Physiographic position.
    - Ridgetop, slope, bottom, other.
  - Geology and soils type
  - Hydrology (if applicable)
  - Energy source (if applicable)
  - Dominant vegetation
    - Overstory vegetation
    - Understory vegetation

- II. Current Status of Habitats on the Daniel Boone National Forest.
  - Brief history, land use trends, and what led to current status.
- III. Management Needs: Recommendations for the Conservation of Habitat to Ensure Species Viability
  - Identify current allocations and standards that apply (informational), official direction may be referenced.
  - Recommended management provisions by Habitat Association, habitat parameters (modifiers), and species specific needs.
- IV. Management Needs: Monitoring and Inventory to Ensure Species Viability
  - Implementation monitoring to maintain and improve this Habitat Association and monitor key ecological elements
  - Other inventory and monitoring needs.

Information Sources: Southern Appalachian Assessment Forests (SAAF) Association reports and format; scientific literature; DBNF Land and Resource Management Plan; Forest resource inventories and monitoring data; Southern Region Species Viability Assessment Process, August 21, 2000; W.O. White paper on Managing for Viable Populations, October 9, 2000; personal communications; and professional judgment.

#### LITERATURE CITED

Boyce, M. S. 1992. Population viability analysis. *Annual Review of Ecology and Systematics* 23:481-506.